

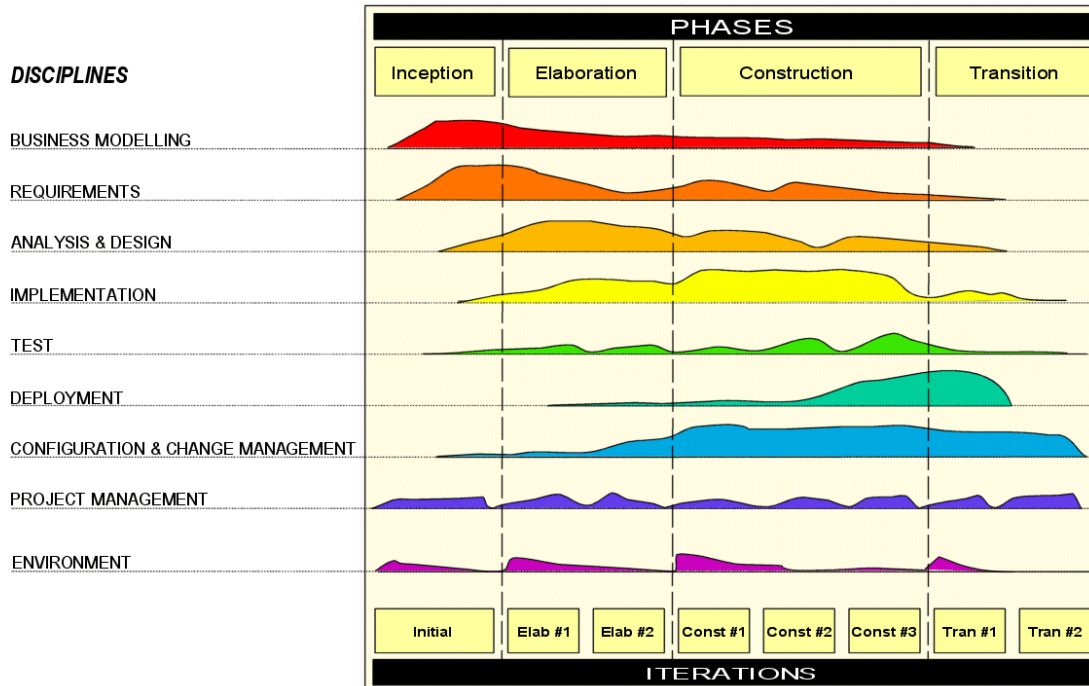
Chapter 17 – Rational Unified Process (RUP)

Rational Unified Process (RUP)

It is an iterative and incremental software development process framework created by IBM in 2003.

Four Phases:

- Inception
- Elaboration
- Construction
- Transition



Six best practices for modern software engineering:

1. Develop iteratively, with risk as the primary iteration driver
2. Manage Requirements
3. Employ component based architecture
4. Model Software Visually
5. Continuously verify quality
6. Control changes

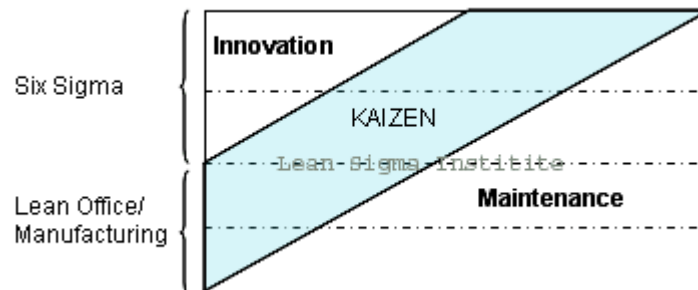
Chapter 18 – six Sigma

Six Sigma

It's a business management strategy developed by Motorola.

Lean Six Sigma

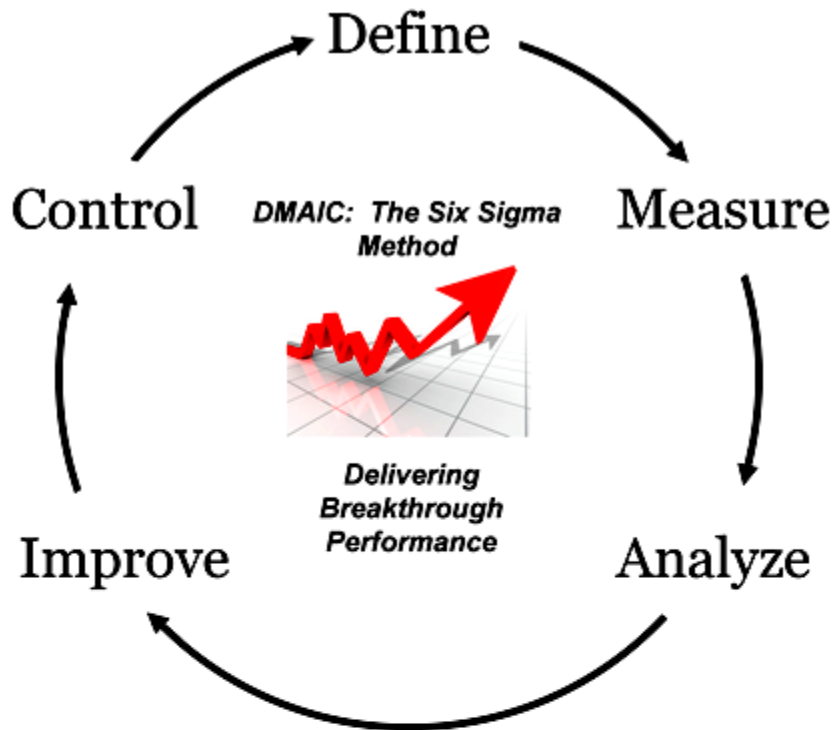
It's an integrated and balanced combination of the speed and variation reduction power of both Lean and Six Sigma to achieve business management process full optimization.



Six Sigma is deployed mainly for innovative, breakthrough and continual improvements under the black belt projects led by Black Belts and Master Black Belts while Lean is deployed mainly for daily continual improvements and performance sustaining activities under the lean kaizen events led by Line Engineers and Supervisors.

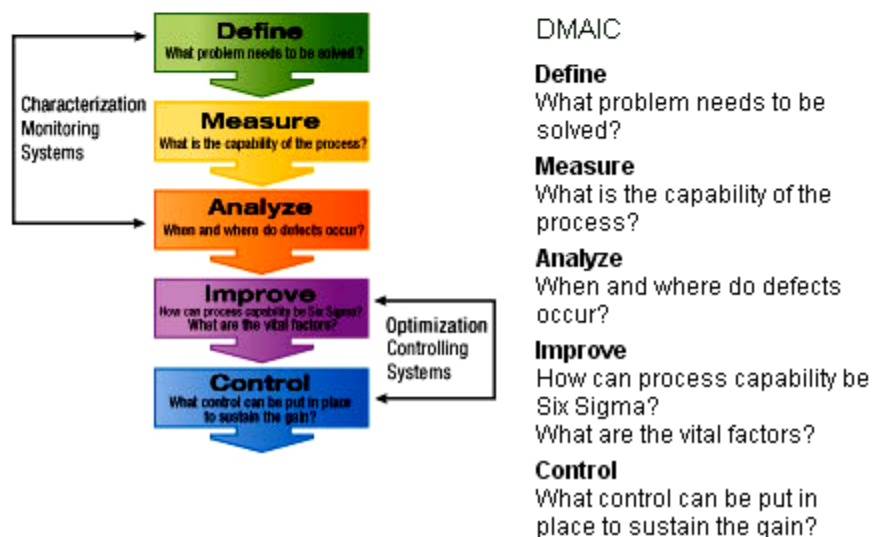
Besides, there are two project methodologies developed from Plan-Do-Check-Act and they are DMAIC and DMADV.

- 1. DMAIC is for improving an existing process.**
- 2. DMADV is for creating new process designs.**



Six Sigma DMAIC

DMAIC, pronounced (De-May-Ick), refers to a data-driven quality strategy for improving processes, and is an integral part of the company's Six Sigma Quality Initiative. DMAIC is an acronym for five interconnected phases: Define, Measure, Analyze, Improve, and Control.

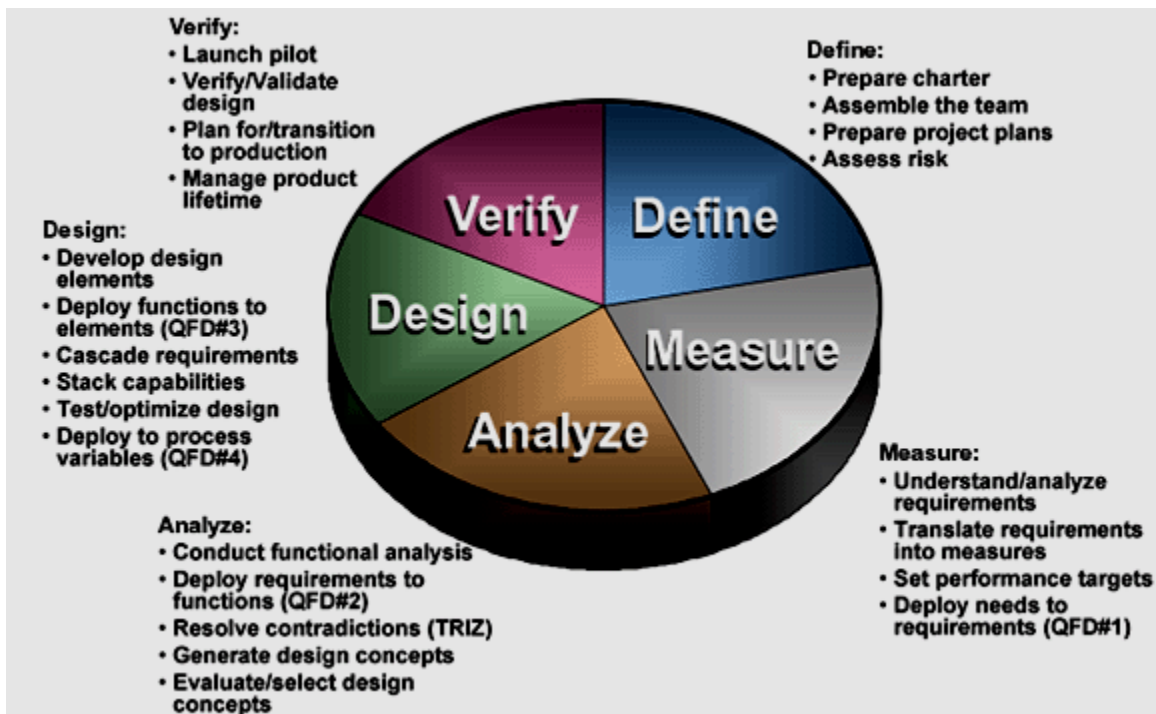


This methodology has five phases:

- Define the problem
- Measure key aspects of the current process
- Analyze the data to investigate and verify cause-and-effect relationships
- Improve or optimize the current process based upon data analysis
- Control the future state process to ensure any deviations from target are corrected before they result in defects.

DMADV

DMADV (Define Measure Analyze Design Verify)

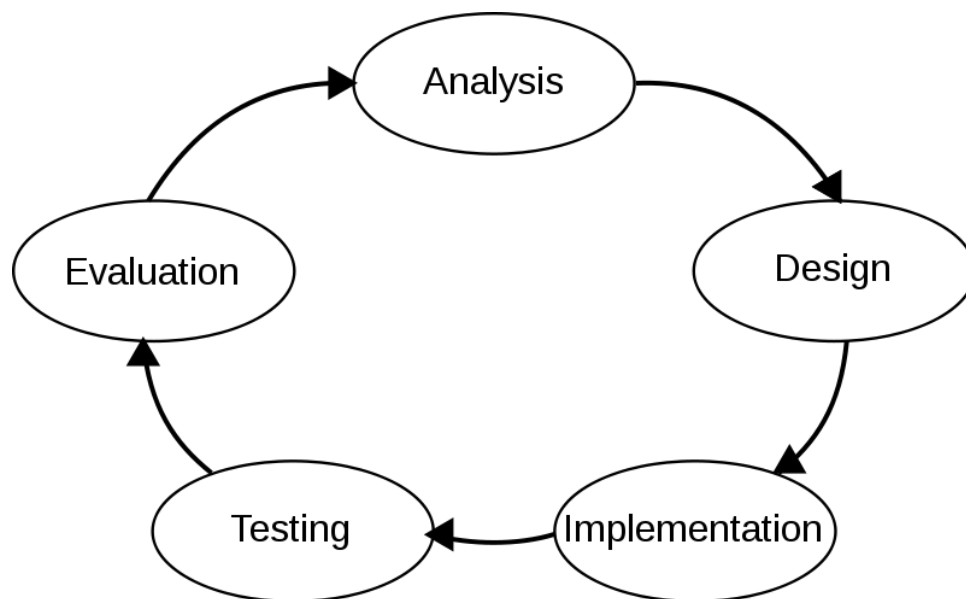


Chapter 19 – Software Development Life Cycle (SDLC)

Software Development Life Cycle (SDLC)

The Systems development life cycle (SDLC), or Software development life cycle in systems engineering, information systems and software engineering, is a process of creating or altering information systems, and the models and methodologies that people use to develop these systems.

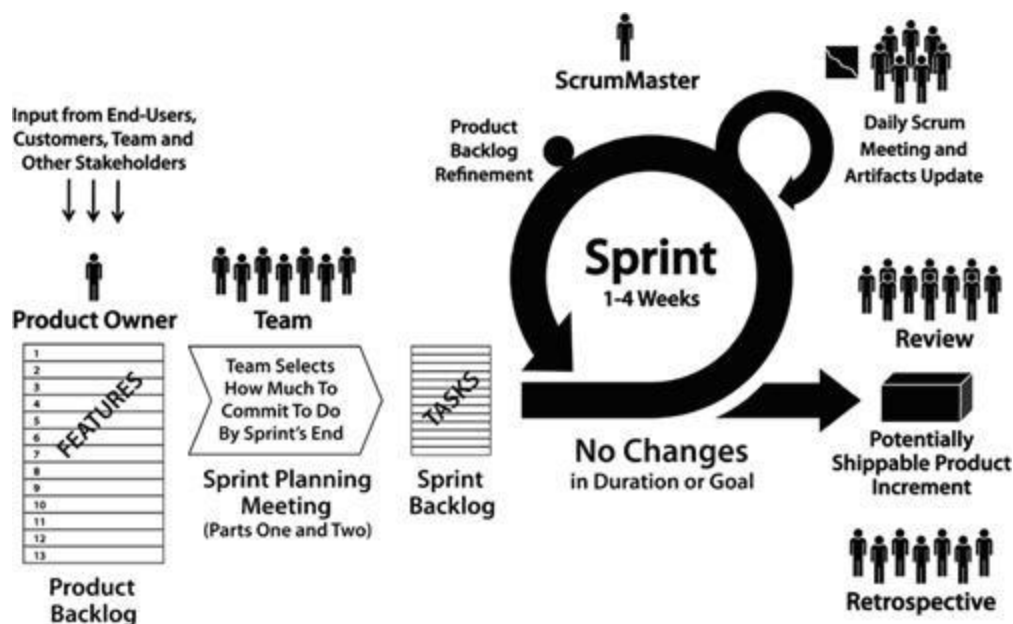
The SDLC is a process used by a systems analyst and development to develop an information system, including requirements, validation, training, and user (stakeholder) ownership. Any SDLC should result in a high quality system that meets or exceeds customer expectations, reaches completion within time and cost estimates, works effectively and efficiently in the current and planned Information Technology infrastructure, and is inexpensive to maintain and cost-effective to enhance. Computer systems are complex and often (especially with the recent rise of service-oriented architecture) link multiple traditional systems potentially supplied by different software vendors. To manage this level of complexity, a number of SDLC models or methodologies have been created, such as "waterfall"; "spiral"; "Agile software development"; "rapid prototyping"; "incremental"; and "synchronize and stabilize".



Chapter 20 – Agile

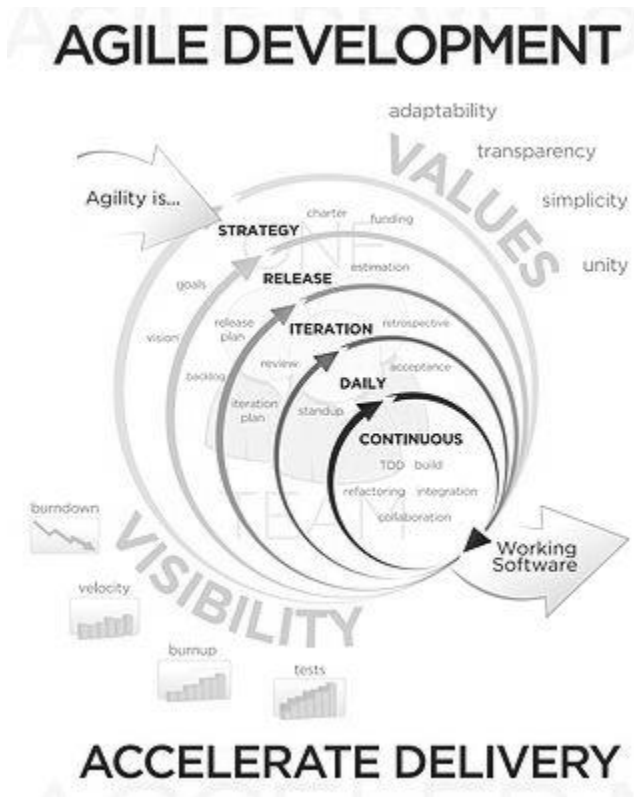
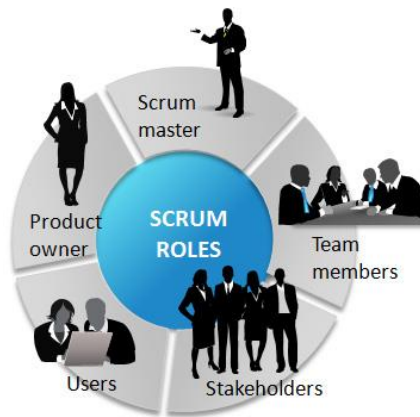
Agile Software Development

Agile is a way to quickly develop working applications by focusing on progressive requirements rather than processes. Agile development is done in iterative manner with short requirements, quick builds and frequent releases. Agile methodology when compared to traditional practices like waterfall model makes development easier, faster and adaptive.



Scrum is a process skeleton that includes a set of practices and predefined roles. The main roles in scrum are the Scrum Master who maintains the processes and works similar to a project manager, the Product Owner who represents the stakeholders, and the Team which includes the developers.

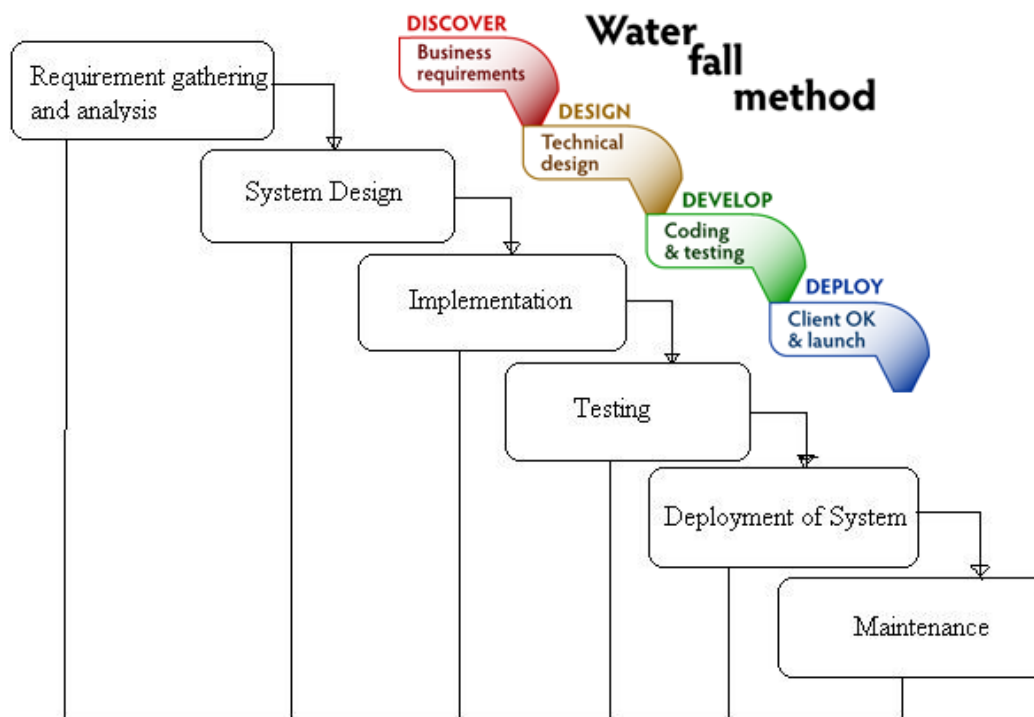
Scrum has three major roles: Product Owner, Scrum Master, and the Team.



Chapter 21 – Waterfall Model

Waterfall Model

It's a sequential design process, often used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of Conception, Initiation, Analysis, Design, Construction, Testing and Maintenance.



Modified Waterfall Model

The Modified Waterfall method is a derivative of the traditional water fall model but with some minor variations relative to iterations between certain stages where the user requirements are validated and verified at the end of each phase. It involves validation and verification between the phases, so any deviations can be corrected immediately, providing the customer satisfaction, so this is preferred.

